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The botanical work of Ezra Michener

C. L. SHEAR AND NEIL E. STEVENS

The reputation of a botanist depends so largely on publication that important work of collecting and collaboration may be very soon forgotten. This has been too nearly true of the botanical work of Dr. Ezra Michener. Almost all of his long life (1794-1887) was spent in a small village in the southern portion of Chester County, Pennsylvania, "almost entirely isolated," as he says, "from the seats of learning, from scientific libraries, and from personal intercourse with the cultivators of science" (8, p. iii). In addition to the numerous duties of a country physician and of a prominent citizen interested in reform movements he accumulated a valuable herbarium, contributed to Darlington's *Flora Cestricea*, published a "Manual of Weeds" (7) for popular use, rearranged and mounted the extensive Schweinitz collections of fungi in the Academy of Natural Sciences of Philadelphia, and carried on a correspondence and exchange of specimens with the leading mycologists of his time.

Michener himself seems to have regarded his botanical work as of little importance. In his "Autographical Notes" (8), a volume of two hundred pages, in which he gives the main facts of his life and interests, he speaks of his "innate fondness for plants" and describes his early progress in the study of botany. Later references to botanical work are largely incidental, as when he describes a botanical press which he devised (p. 43), or speaks of rearranging his herbarium of more than a thousand plants during an illness which occurred in 1843 (p. 52), or of collecting plants while on a trip to Virginia in 1846 (p. 59). He refers, however, to assisting Dr. Darlington in the preparation of the *Florula Cestricea* (p. 43). The above facts are summarized by Harshberger (5) in his "Botanists of Philadelphia." A brief biological note, reprinted from the *West Chester Republican*, was also published in the *Friends' Intelligencer and Journal*, July 2, 1887 (9).

A few years ago the writers discovered that Michener mounted the fungi in the Schweinitz herbarium in Philadelphia (11, p. 7), and while continuing their investigations on this important herbarium were able to determine the date of this work (10). In trying to determine this latter point the writers made a thorough search in the region about Dr. Michener's home near Toughkenamon, Pennsylvania, for documents which might throw light on the matter.

CORRESPONDENCE WITH CURTIS AND OTHER BOTANISTS

Dr. Michener's correspondence, which is known to have been voluminous and to have contained letters from some of the most eminent scientists of his time, including Curtis, Ravenel, and Tuckerman (see Harshberger 5, p. 180), appears to have been destroyed. No portion of it could be found either at his former residence, now occupied by his grandson, Ezra J. Webster, or elsewhere. Fortunately, however, Miss Alice Swayne, librarian of the Bayard Taylor Memorial Library, Kennett Square, Pennsylvania, who had previously assisted the writers and was aware of their interest in the Michener correspondence, found a few pages of letter press copies of letters from him in his collection of shells now in the possession of the library. Although there are but twelve sheets of this letter press, numbered consecutively 2 to 13, several of which are somewhat worn, some of the letters from Dr. Michener contain information of great value. That such fragmentary records accidentally preserved must be depended on for information concerning a botanist who died only thirty years ago, argues a neglect in the preservation of accurate historical records which is most unfortunate.

Two letters to Curtis, copies of which were found in the letter press referred to, throw so much light on Michener's purpose and methods in taking up the study of fungi, as well as on his personal relations with Curtis that they are here included nearly in full.

[6]*

NEW GARDEN 26th of 11th mo 1855

Dear Friend:

It seems a long time since I have written to thee. Thy note of Sept 11th came duly to hand, requesting to have some of *Botrytis infestans* and would have been

* Figures refer to pages of the letter press.

promptly responded to if I could have found the thing.—Unfortunately the potato tops were gone before it arrived—and I waited to know whether any could still be found—since which time I have been much from home and mostly occupied with other cases.—An unusually wet season ha[s] produced an abundant growth of our favorite plants—the Fungi—of which a large number hav[e] been collected—but from the tone of thy last note (without date) I feel compelled however reluctantly to decline transmitting them at present.

The inducements which led me into the study of the fungi are a desire to supply a blank in the catalogue of Natural productions of Chester County, which some of us contemplated—and while I could not obtain the means to determine all the species myself—I vainly hoped that my services as a collector of fungi, might entitle me to the assistance which I stood in need of in determining species.—Disappointed in this hope, I have but little inducement to prosecute the study much farther—yet there is a charm attending it which will probably [con]tinue as long as I am able to pursue it.—How is the review of Schweinitz progressing? I have been watching for it in the Journal of the Academy. In a few days I expect to commence arranging Schweinitz Fungi—and it would have been a great pleasure to have [7] had the assistance of your corrections during the examination of his species.—I shall however implicitly follow his numbering and labeling [two words blurred] out in the Synopsis Fungorum.—

Enclosed will be found specimens of a few of my back numbers which were marked as desiderata:—

As heretofore
thy friend

M. A. CURTIS—

E. MICHENER

N. B.—Please write whenever convenient.—

Curtis's reply to this letter may be readily guessed at from another letter which Michener wrote several weeks later. This letter, which is without address, shows from the context that it was written to Curtis.

[12]

NEW GARDEN 28th of 1st mo 1856.

Dear friend,

Thine of the 8th instant was duly received.

It was a kno[w]ledge of thy numerous engagements in the Mycological field—apart from “business” proper, which has frequently led me to feel and to express a fear of trespassing too much upon thy time—and, so far as I can recollect, has prevented me from making any claim upon thy attention farther than it may have been convenient to thee to bestow—nor am I conscious of having manifested that “impatience” of which thee speak.—Be this as it may—thy last preceding note commenced by saying—“You need not trouble yourself by sending me specimens too often.” This was language which I thought could hardly be misunderstood, and my consequent course has been taken according to my acceptance of it.—In future I will send remittances (as in truth I have always done) in strict conformity with the conditions laid down in the note referred to. vis.—“You are at liberty to [se]nd as often as you please, only leaving the liberty to answer whe[n] I please.”

[The next paragraph, of four lines, is somewhat blurred and is here omitted.]

In working over the first eight books of Schweinitz' Fungi, I have been grieved to find a number of the envelopes either missing or empty in addition to the many which rendered valueless by the ravages of insects.—Perhaps the destruction will not be so great after we get through the Hymenomycetes.—

Ever thine with respect,

E. MICHENER.

Four other letters of which letter press copies are preserved deal with Michener's botanical interests. In two letters to E. Lanning he speaks of exchanging specimens, including fungi, and of having received a parcel of fungi from "our friend H. W. Ravenel." In a letter dated "New Garden, 28 of 11 mo., 1855," to Dr. William Darlington, who had apparently referred to Michener some question of fungus identity, he quotes a considerable portion of Fries description of *Penicillium crustaceum* from Fries Systema Mycologicum (3: p. 407, 408), indicating his familiarity with this standard mycological work. In a letter to Mr. Thomas P. James, dated "New Garden, 4th of 1st mo., 1856," he requests the loan of another lens—"I greatly feel the want of another glass. . . . The powers which [I] have are 20, 30, 50 and 250, one intermediate between the two last, say from 80 to 150 would often assist me wondrously."

In writing to Curtis of the proposed "Catalogue of Natural Productions of Chester County" Michener evidently had reference to the work of the Chester County Cabinet, an organization formed under the leadership of Dr. Darlington, the object of which was "two-fold: first, to form a collection of the natural productions of the County; and second, to gather materials for its prospective history" (8, p. 43). Michener evidently undertook the compilation of a list of fungi (6, introduction; 2, p. iv; and 4, p. 458). To this end he corresponded and exchanged specimens with Ravenel and Curtis, especially the latter, until, as he wrote at the age of eighty-five (4),

"There have been some 1200 species of fungi collected and preserved in this county, a very large percentage of which have passed under the experienced eyes of Berkeley and Curtis, and carry the impress of their determination, it is impossible for me, at this late period of life, to arrange them properly in a catalogue without more efficient aid than I am able to obtain."

OTHER INTERESTS

Michener naturally included the lichens in his studies and sent numerous specimens to Tuckerman for identification (see 12). That he was a collector of no mean ability is shown by the fact that in his list of lichens of Chester County, published in the third edition of Darlington's *Flora Cestrica*, 1853, there are included (3, p. 456) "about 20 species never before published in this country, one-half of which are entirely new." These new species are all described by Tuckerman, who named one species *Biatora Micheneri*, in Michener's honor. Tuckerman also named a species in this list in honor of the county, *Verrucaria cestrensis*. Tuckerman presented Michener with a complete set of his "Lichenes Americae Septentrionalis," inscribed

"Dno. E. MICHENER,
AUCTOR
10 AUG. 1852."

These volumes, which bear notes in Michener's hand, are now in the possession of the writers.

Darlington's impression of Michener is frankly stated in the introduction to this edition of the *Flora Cestrica*, in which he refers to him as "a naturalist from whose acumen, diligence, and indomitable perseverance we may fairly expect as thorough an exploration of every department of our Cryptogamy, as the active duties of his profession and the life-time of an Individual will permit."

Michener's interest in natural science was by no means confined to botany. He was co-author with Dr. William D. Hartman of a work on the shells of Chester County, and prepared a considerable portion of the section on "Zoology" in the history of Chester County compiled by Futhey and Cope (4). In this there are numerous footnotes signed with his initials, indicating close field observations on the habits of birds.

In the manuscript "Catalogue of the Museum presented to Swarthmore" are listed with Michener's usual care four hundred and twenty-six species of mammals, birds, and reptiles, arranged in accordance with the nomenclature of the best authorities of his time. The greater portion of these specimens (8, p. 202) had

been mounted by Michener himself. The manuscript has been deposited in the library of the Department of Agriculture.

Michener was also interested in genealogy and contributed a history of his family to the history of Chester County just mentioned. There is in the possession of his grandson, Mr. Ezra J. Webster, of Toughkenamon, Pennsylvania, an elaborate genealogical study of the Michener family, prepared by Dr. Michener.

THE MANUAL OF WEEDS

In 1872 Michener published a volume of about one hundred and fifty pages, entitled "A Manual of Weeds or the Weed Extirpator," designed, as he says in his introduction, to supplement Darlington's (2) Agricultural Botany, and "to place in the hands of the young and intelligent culturist * * * a cheap, and reliable Hand book of Weeds." This book does not seem to have received wide circulation. There is no copy in the Library of Congress or in the Library of the Department of Agriculture. A copy in the Bayard Taylor Library at Kennett Square, Pennsylvania, was, however, loaned to the writers by the librarian, Miss Alice W. Swayne.

The manual lists one hundred weeds systematically arranged, many of them with observations as to habit of growth and suggestions for their control. There is also a glossary of botanic terms.

In the introduction, which fills twenty pages, Michener exhibits considerable grasp of the fundamentals of plant physiology. He refers to the leaves as "the essential organs of digestion, assimilation, and respiration." That he understood many of the principles of plant distribution is evidenced by his warning against the practice of throwing weed seeds into water courses, and to the danger of carrying rhizomes from field to field on agricultural implements. He refers to the blackberry as a bi-per-annual because, as he says, "the root is per-annual and the stem strictly bi-annual." A characteristic remark is that "field fence corners cannot appropriately be used for flower gardens."

Some of his ideas as to the control of weeds must have seemed rather radical fifty years ago. For instance, he urges that the weed question is not a matter merely "of individual, of local, or of agricultural interest. It is more than all this. . . . It is

national in all its bearings." Then drawing an analogy from the city boards of health and their quarantine laws, he urges "the establishment of an agricultural board of health in every district, invested with ample powers and resources to maintain a healthy agriculture," and adds: "It may be necessary to provide *inspection of seeds* before they are allowed to be sowed." These suggestions are in part carried out at the present time by our Federal Horticultural Board and by state seed inspection laws. It is possible that we may in time arrive at the condition finally urged by Michener, who suggests that in case a farmer does not properly care for his fields "it may be necessary to remove him temporarily from his premises, and to place them in the hands of an agent until they are fully cleansed from the infection."

PHILADELPHIA ACADEMY OF SCIENCES

Michener was elected a correspondent of the Academy of Natural Sciences, Philadelphia, in 1840, and throughout his life it formed his chief contact with the scientific world. While Michener's name appears but rarely in the records, his services to the Academy were considerable and his interest great.

The writers have already called attention to the fact that the mounted portion of Schweinitz's collection of fungi at the Philadelphia Academy is mounted in exactly the same manner as are the specimens in Dr. Michener's herbarium (11). It is now evident that the method of arrangement was original with Dr. Michener. For in the files of the Academy is the following letter written on the outer surface of a brown paper folder identical in size and kind of paper with those in the Michener herbarium, and having pinned on the inner side three of the small square sheets of ruled paper like those on which the fungi are pasted in his herbarium (11, *pl.* 3, 4). This sheet was evidently intended as a sample, and Michener thriftily utilized the outside of the sample for his letter.

Erysiphe Hed fil: (Evidently not a part of the letter but of the sample,
i. e., it is the label.)

AVONDALE 26th of 11th mo 1855.

Dear Doctor,

I have inclosed a sheet of my paper with a specimen of labels, such as I use, for thy examination. —From which thee will vary the size of the sheet; and the size

and number of the labels, to each sheet—as thy own judgment may direct.—Common Bookbinders boards are not substantial enough for the portfolios—they should be very firm. —

A stouter paper than this sheet would also be better for the first class (Hymenomycetes) as many of the species are very coarse and rugged . . .

Should we succeed satisfactorily with the Fungi—perhaps we may then be prepared to arrange the Lichens & Musci in the same way—but will try one at a time.

If the portfolios should not be sent with the other materials please inform me what size the Boards for them will be cut.

Respectfully

E. MICHENER

DR. ZANTZINGER. —

The first package of fungi appears to have been sent to Dr. Michener shortly after this letter was written for early in the following year, 1856, he sent a letter to the Academy concerning the problems connected with their rearrangement. This letter contains so much information regarding the condition of the herbarium at that time as well as the part played by Michener in its rearrangement that it is here printed in full.

NEW GARDEN 16 of I mo 1856

Botanical Com. Acad. Nat. Sciences,

I have mounted specimens of all that could be found in the parcel of Fungi sent. Many however were totally destroyed by insects—or had otherwise disappeared.—The envelopes very rarely contain more than two, quite common only one specimen—That I have felt a constant fear of being suspected for the same proclivity which characterize some other would-be naturalists. As a *preventive* I would suggest that you carefully look over the collection before sending it so as fully to appreciate its dilapidated condition.

There are two points upon which I wish the advice of the com.—If the portfolios are not yet made I would suggest the propriety of reducing the size of the sheets and labels.—I am not unmindful of a desire to preserve uniformity in the entire Herbarium (and this could still be done in appearance on the shelves) but I think it would be at the cost of convenience and utility.—If it does not come too late I would recommend the size and form of the accompanying specimen—The adoption of it would cost you a trifle of lost labour—and me a good deal more but I think would repay it. —

I also wish your advice upon the arrangement—The original idea was to follow Schweinitz Synopsis so far as specimens were to be found—and then to fill up the blanks so far as I can out of my own collection.—But this does not admit of introducing either his own exotic species—or other more recent discoveries in their proper connection.—We have no very good classification but must follow some one—I prefer Lindley's [revised ?].—The specimen sheet is intended to discriminate between the North American & exotic species of Shw. Herb.—and also those which may be subsequently added—by the colour of the paper a reference on the label to the source whence the specimen was derived. If this should be thought sufficiently to

designate the specimens you will perceive that additions can at any time be made [reverse of sheet] without interference with the previous labour.—

Should you approve the plan paper could be selected of such size as would cut without much waste.

Please advise me early of your conclusion in the matter.

Yours respectfully

E. MICHENER

N. B.—I can not return the package until I receive the portfolios to place them in. —What would you want done with the old books, envelopes, etc.?—a few of them contain specimens which ought to be preserved—and it might be worth while to retain Sch. own labels along with the specimens—but this would open a wider field for labour:—

E. M.

Evidently, the committee did not agree with Michener that the size of the sheets should be reduced, for the mounted portion of the Schweinitz herbarium at Philadelphia is on sheets of folio size, whereas those in Michener's own herbarium are quarto. Very fortunately, however, his suggestion that the original packets were worth retaining was accepted, as these are now preserved in the Academy.

Michener worked on this herbarium during the winters of 1855–56 and 1856–57, and in 1857 sent to the Academy a considerable collection of fungi, as indicated by the report of "Donations to Museum" in the Proceedings for that year:

Seven hundred and ninety-six species fungi (finely mounted specimens). Presented by Rev. M. A. Curtis. Two hundred and one species fungi (finely mounted specimens). Presented by Ezra Michener, who prepared all the specimens.

The files of the Academy of Natural Sciences in Philadelphia contain five letters from Michener regarding the rearrangement of the Schweinitz herbarium and in the interval after that only three brief notes. Dr. Nolan, Secretary of the Academy, states that while the files are by no means complete, it is very probable that these are all the communications received from Michener, as he was characteristically a man of few words. Two letters written in 1867 referred to copies of the Proceedings of the Society which he had found missing when the volumes were being sent to the bindery. The remaining note written on a half sheet of letter paper is from its date and nature probably the last communication of Dr. Michener to the Philadelphia Academy.

TOUGHKENAMON 6 of 3 mo. 1882

EDW. J. NOLAN, M. D.

Dear Friend

Please find enclosed a postal order (\$5) for my subscription for the Proceedings of the Acad. Nat. Sc. —

I have taken them for more than forty years, with interest, but the lapse of 88 years wear and tear, has disqualified me for such reading and studies.

Please close my subscription at the end of the current volume.

And oblige

Thine sincerely

E. MICHENER.

THE MICHENER HERBARIUM

Dr. Michener's zoological collections, as stated in a brief supplementary note published with his autobiography, which were given to Swarthmore College in 1869, were there lost in the fire which occurred a few years later. Very fortunately, however, his herbarium as well as a collection of shells remained in the possession of his children. The preservation of the herbarium seems to have been largely due to the interest of his son, Ellwood Michener, who apparently inherited his father's taste for botanical studies and accumulated an herbarium of flowering plants which the writers have examined.

Some years before his death, Ellwood Michener presented the collections of plants and shells to the Bayard Taylor Memorial Library, of Kennett Square, where they remained until 1917. The trustees of the library, however, realizing that the herbarium would be more accessible to scientific investigators as well as more carefully preserved in the Department of Agriculture, sold the collections of fungi to the mycological collections of the Bureau of Plant Industry.

In addition to portions of many of Schweinitz's specimens, as described in an earlier paper (II, pp. 7-11), the Michener herbarium contains numerous specimens from the collections of fungi described by Berkeley and Curtis (I) as well as fungi identified by Michener himself. With the exactness characteristic of all his work Michener indicated on the labels the source of the specimen and by whom it was identified. This collection of fungi which has now been made available for study will prove of great value to American mycologists. The herbarium also contains an excel-

lent collection of lichens, with many authentic specimens from Tuckerman, who identified most of the material. There are also many phanerogams, a good collection of mosses, many of which are from Europe, and a few hepatics and algae.

Although Michener published very little, his contributions to botany were considerable. Realizing the limitations of his own situation and the impossibility of satisfactorily identifying all the species himself he wisely sent his collections for identification to the leading authorities on the several groups, and devoted his own energies to collecting and preparing his herbarium. He thus secured an authoritative and fairly comprehensive flora of his region, and added to the number of known species and to the known distribution of species already recognized, a type of botanical work greatly needed.

BUREAU OF PLANT INDUSTRY,
WASHINGTON, D. C.

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